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SOURCE OF FRUSTRATION AND THE FUNCTION OF AGGRESSION



by
ROBERT T. CAREY

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Source of Frustration and the Function of Aggression," submitted by Robert T. Carey in partial fulfilment of the requirements for the degree of Master of Arts.

ABSTRACT

The effects of the interpretation of a frustrating interaction were examined in relation to the function served by an aggressive response. An attempt was made to relate Ss' possible inferences concerning the "cause" of frustration to subsequent aggression serving a hostile (injurious) function. Attributions of intentional frustration were hypothesized to generate hostile aggression. It was assumed that it is socially appropriate to redress the effects of harmful intentions by harmful means, but unwarranted to use similar means to respond to unintentional thwartings. To assess these conjectures, Ss were exposed to frustration or no frustration in attempting to teach either a competent or an incompetent confederate a concept formation task. It was assumed that frustration by a competent person in the context of the experimental situation would seem intentional, while frustration by an incompetent person would not. Following the concept formation tasks, Ss were given the opportunity to deliver electric shocks, increasing the intensity of which would ostensibly either be beneficial in improving performance (instrumental aggression) or be of no benefit (hostile aggression). Results of the analysis of data from the complete design failed to support these contentions. However, findings from checks on the experimental manipulations questioned the appropriateness of Ss perceptions of the experimental situation, and led to an alternative analysis of the data. One significant effect appeared in the alternative analysis. This effect was interpreted as consistent with the rationale of the study, yet the interpretation required two rather tentative assumptions. Two alternative interpretations were also given. No evidence

emerged from the alternative analysis which supported any one interpretation above the other two. It was suggested that further research is necessary to create more appropriate conditions for the evaluation of the hypotheses offered in this thesis.

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INTRODUCTION

In the past two decades many studies have been devoted to the psychology of aggression (see Berkowitz 1962, 1969; Buss, 1961; Feshbach, 1971; Kaufmann, 1970). Since the frustration-aggression hypothesis was first proposed by Dollard, Doob, Miller, Mowrer, and Sears in 1939, interests in the area have proliferated and diverged greatly. However, fundamental theoretical issues remain unresolved. These issues are threefold: the elucidation of antecedent conditions contributing to the expression of aggression, the specification of the aggressive response, and, intimately related to the latter, the question of "intentionality," "purposiveness," or "goal directedness" in aggressive behavior. In this thesis an attempt was made to provide a cognitive framework specifying how a person's interpretation of a frustrating interaction determines the expression of aggression. Specifically, the effects of the attribution of intentional frustration were examined in relation to the function served by an aggressive response.

The original formulation of the frustration-aggression hypothesis asserted that "the occurrence of aggressive behavior always presupposes the existence of frustration, and contrariwise, that the existence of frustration leads to some form of aggression" (Dollard, et al., 1939, p. 1). The assertion was subsequently modified by Miller (1941) in order to distinguish between the instigation to aggression and actual aggressive activity. The modified version maintained that aggression

always presupposed frustration, but added that frustration produces an instigation to many responses, some of which may eventuate in aggression. Berkowitz (1962, 1965a) further modified the hypothesis by eliminating the assertion that every act of aggression presupposed an occurrence of frustration, but retained the latter portion "every frustration increases the instigation to aggression." Our concern here rests with Berkowitz' revision.

Frustration as an Antecedent of Aggression

Research concerned with testing the notion that frustration increases the likelihood of overt aggression has been equivocal and contradictory (c.f. Berkowitz, 1962, 1969; Buss, 1961; Kaufmann, 1965, 1970; Rule and Carey, 1971). On the basis of his research Buss (1963, 1966) concluded that two classes of situations, frustration and the presentation of noxious stimuli, are the antecedents of aggression. Frustration, according to Buss, is at best only a weak antecedent.

Buss's research (1963, 1966) focused on the frustration-aggression relationship through the instrumental or non-instrumental nature of the aggressive response. He assumed that when aggression is valueless in overcoming frustration, i.e., is non-instrumental, it can serve only to release the anger of the frustrated person. If, however, aggression is of value in surmounting the interference, i.e., is instrumental, it is reinforced not only by the release of anger but also by the attainment of the thwarted goal. Given these assumptions, he predicted that aggression should be "mild" under conditions in which it serves no instrumental function. While investigating the effects of frustration on subsequent aggression which was assumed to be non-instrumental, he found that frustration produced a significant increase in aggression

intensity. It was claimed that although the increase was significant, it was minimal, supporting the first part of Buss' analysis (Buss, 1963). In examining the effect of frustration on assumed instrumental aggression, Buss (1966) found no relationship between frustration and aggression. Since he maintained that the instrumental value of aggression should enhance the effects of frustration he concluded that, at least for college students, frustration is a rather unimportant antecedent of physical aggression.

Buss' conclusion has not been supported by the findings of several recent studies (Geen and Berkowitz, 1967; Geen, 1968; Rule and Hewitt, 1971; Rule and Percival, 1971). Employing a non-instrumental paradigm Geen and Berkowitz (1967) found that task frustrated Ss who were exposed to a film depiction of violence were more aggressive than control Ss, but less so than those who were insulted before viewing. Modifying this experiment to unconfound insult and task frustration, Geen (1968) found that when aggressive cues were provided, frustration led to increased aggression. Yet, the magnitude of the effect was not as great as that produced by insult alone. Rule and Percival (1971) reported results which suggest that frustration leads to aggression when the subsequent aggression has instrumental value. The effects of insult appeared as an interaction with frustration across trials. Following frustration, insulting the aggressor led to less intense aggression in comparison with no insult, while following no frustration, an insult produced more intense aggression than no insult. Rule and Hewitt (1971) observed no difference between "low thwarting" (frustration) and "high thwarting" (frustration plus insult) conditions, while both produced

significantly more aggression than a "moderate thwarting" condition.

The status of frustration as an antecedent of aggression is still open to question. In contradiction to Buss (1966), the studies cited above consistently reported that frustration produced aggression. Geen (1968) explained the inconsistencies between the findings of his research and both Geen and Berkowitz (1967), and Buss (1966) in terms of the presence or absence of aggressive cues. He asserted "that frustration is a weak antecedent unless suitable aggressive cues are present." However, the frustration effect was quite pronounced in the Rule and Percival (1971) study in the absence of strong aggressive cues. It seems that other variables must be examined in order to account for experimental results which show no relationship between frustration and direct, physical aggression (e.g., Buss, 1966; Epstein and Taylor, 1967; Gentry, 1970).

Hostile and Instrumental Functions of Aggression

Dollard et al., (1939) emphasized the hostile, pain inflicting function of frustration-produced aggression. Subsequent modifications of the frustration-aggression hypothesis have re-emphasized the pain producing outcome as an underlying motive guiding the aggressive response (Berkowitz, 1962; Miller, 1941). However, studies which have examined the relationship between frustration and direct, physical aggression, with the exception of Epstein and Taylor (1967) and Rule and Hewitt (1971), have employed paradigms which engage responses that confound hostile and instrumental goals (Buss, 1963, 1966; Geen and Berkowitz, 1967; Geen, 1968; Gentry, 1970; Rule and Percival, 1971). Ss in these experiments delivered electrical shocks in response to errors

committed in a learning task ostensibly performed by another S. The victim's performance always improved over trials, and significant main effects for trials were frequently reported, suggesting that Ss may assume that increasing shock intensity improves performance. Therefore, aggression in these contexts could have served two functions: a hostile one, the purpose of which is simply the infliction of pain, or an instrumental one, the purpose of which is to improve the victim's performance. One purpose of this study was to examine whether frustration leads to aggression when these goals are unconfounded.

To the degree that hostile and instrumental goals are confounded in an experiment, frustration-produced aggression as conceived of by Dollard et al. (1939) and Berkowitz (1962) may be attenuated. For example, Buss' 1966 experiment employed a "learning task" paradigm in which frustration was manipulated by the confederate's ostensible failure to achieve normative or better performance. Ss were told that to receive a reward, the learner should learn "fast," and that the norm was 30 trials. The aggressive response, therefore, could not have been instrumental in removing frustration subsequent to trial 30, but it could have been instrumental in facilitating improved performance. If aggression subsequent to frustration serves a hostile function, then aggression following trial 30 may have been in the service of contradictory goals. The achievement of criterion performance during this phase should be of little rewarding consequence to the frustrated aggressor. He has failed at his task because of the victim's failure, and the probability of attaining the goal towards which he was acting initially by similar behavior is zero. Furthermore, it seems reasonable

that while the outcome may be of relatively little consequence to the aggressor it may be construed as being of some importance to the victim. If the hostile function of aggression is not only the infliction of pain but general "harm" to the instigator of frustration (Berkowitz, 1962), it is doubtfully served when in its expression, the victim is perhaps aided. Thus the expression of aggression which has a facilitating effect on the victim's performance may mitigate the effect of frustration.

Only one study (Epstein and Taylor, 1967) has examined the effect of frustration in a context suggested by the frustration-aggression hypothesis. In this study subsequent aggression was not related to overcoming frustration nor instrumental to the achievement of any non-aggressive goal. They reported no relationship between frustration and aggression. The authors suggested, however, that their findings may be limited to the situation they created. Furthermore, the frustration manipulation itself may have been responsible for the failure to find the predicted effect. The manipulation employed was the degree of defeat in a competitive situation. To define the defeat manipulation they quoted a passage from Berkowitz (1962, p. 178). Included in the quote is the sentence "The contest may have been a fair one, and the loser may know he is supposed to be a good sport, but he is still thwarted (although this can be defined as a 'reasonable' or 'non-arbitrary' frustration)" (italics mine).

Although frustration was originally defined as any thwarting of an on-going, goal directed sequence of behavior, experimental findings have demonstrated that the interpretation of the blocking can offset

subsequent aggression (Burnstein and Worchel, 1962; Cohen, 1955; Lanza and Hannah, 1969; Pastore, 1952; Rothaus and Worchel, 1960; Rule and Hewitt, 1971). Furthermore, it has been shown that frustrations which are interpreted as non-arbitrary or reasonable are followed by much less aggression than those which are interpreted as arbitrary or unreasonable (Burnstein and Worchel, 1962; Cohen, 1955; Pastore, 1952; Rothaus and Worchel, 1960). Hostile aggression may not have occurred in the Epstein and Taylor study, because the thwarting may have been interpreted as reasonable. An examination of the conditions which promote different interpretations of frustration seems necessary in order to clarify the relationship between frustration and aggression.

Attribution Theory and Hostile Aggression

Judgements as to the reasonableness of a frustrating act seem to be related to, if not identical with, justifications for the act on the bases of inferred causes. A person who experiences an arbitrary frustration may attribute it to the "whimsy or petulance of the frustrator," while reasonable frustrations may be attributed to conditions beyond anyone's control (Buss, 1961). The purpose of this study was to elucidate how such attributions to the frustrator determine aggressive responses.

The attribution theory of person perception originated by Heider (1946, 1958) and extended by Jones and Davis (1965) offers a framework within which inferences in a frustration situation may be examined. According to Heider (1958), a person's inferences about the impersonal and personal causes of particular events, especially one's attributions as to the intentions of others, determine a significant portion of our

understanding of situations and our behavior in reference to them. The notions of impersonal and personal causation form the basis of what Heider refers to as the naive psychology of the perceiver. When individuals interact, it is assumed that this framework functions to explain the interaction and mediate further interchange.

According to attribution theory the perceiver's task is to infer the causal antecedents of another's acts. The first step in this process is linking a particular action and its effect to a source. The source may be linked to the perceiver, p, another person or persons, o or mere happenstance. When the source is linked to o, p then attempts to infer whether o knew that his action could produce the effect in question, and whether o actually possessed the ability to achieve it. When p infers that o knew what would happen and was fully capable of effecting it, p judges that o intended to produce that outcome. It is assumed that p's considerations are guided by a superordinate concern to link events to relatively stable properties in order to render the environment more stable and predictable. Since o can intend to produce the same effect for different reasons in different situations, p must link the intention to some dispositional characteristic of o. When p has accomplished this, o's behavior is explained and p can entertain responses to o appropriate to o's disposition.

Consider now a frustration situation. P engages o in a learning task. If o satisfies the criterion of fast learning, then p receives a reward. However, o fails to achieve the criterion and p, therefore, fails to gain the reward. If no accident can account for this failure, p may attribute the failure to his own inadequacy as a teacher. In situations where that possibility is minimized, however, p can infer that o is the

source of the failure. P further may infer that o knew that p would be deprived of a reward if o failed, and that o is competent enough to have succeeded. This latter inference of o's competency is critical to the inference of o's intention in failing. Of course, o has the ability to fail. The fact that he may also be judged as competent means that given the alternatives for action p apprehends as available to o, failing or succeeding, o chose failure. Thus, p may infer that o intended to deprive him of a reward. On the bases of o's rather negative intention p may attribute o's act to a hostile disposition. However, the degree of confidence that p holds when inferring the hostile disposition may be quite small, because o's intention may reflect any of several dispositions.

While p may not infer that o's intention was engaged by a hostile disposition, p may still attribute o's failure to an intention to frustrate p. There is a correspondence between this interpretation of a frustration and unreasonable or arbitrary frustrations considered by Pastore (1952). For example, Pastore described an arbitrary frustration situation as "You're waiting on the right corner for a bus, and the driver intentionally passes you by" (*italics mine*). If one infers that the driver knew what the effect would be and was free to either stop or pass on by, it would follow that the driver has committed an act which is functionally similar to that committed by o. Furthermore, if we change our previous situation such that o is considered an incompetent person, the outcome of his action would constitute a reasonable frustration. P would not infer that o has the ability to produce the desired effect. Therefore, p would not infer that o intended the frustration.

The frustrating act would be inferred to be caused by conditions outside of p or o's control, analogous to Pastore's reasonable frustration, "You notice that [the bus] is a special on its way to the garage."

Results of research concerned with examining the effect of the "reasonableness" of frustration lead to the prediction that the consequences of attributing frustration to an intentional act foster aggression. However, it is not enough to say that more aggression will be displayed under conditions of arbitrary or unreasonable frustration. It is theoretically important to relate attributions to the frustrator specifically to the function served by an aggressive response.

Given the opportunity to aggress against o, it seems inappropriate or incongruent with the attribution of intentional frustration to perform aggressive acts which are of instrumental value to o. O's intention can hardly be understood as anything but harmful to p. Pepitone and Sherberg (1957) found that attributions of "bad intentions" were followed by dislike for the person to whom the intentions were attributed, and Berkowitz (1965b) has shown that dislike increases the amount of aggression. Furthermore, cultural norms prescribe retaliation as an appropriate response to redress an injury (Feshbach, 1964, 1971). Specifically, p would not help someone who has intentionally frustrated him, especially when he is involved in a situation which resembles the one in which the incident occurred. Instead, he would seek retribution. If following the frustrating incident p is put in the position of delivering electrical shocks to o for errors in a learning task, giving shocks will serve a hostile function. He will punish o in order to redress the frustration, not to improve o's performance.

Research on the consequences of causal attributions in frustration situations has been meagre. Only three studies have reported relevant findings in terms of attribution theory. Jones and DeCharms (1957) reported that the evaluation of individuals tended to be more negative when the "locus of phenomenal causality" was interpreted as internal to the instigator of frustration. Lanzetta and Hannah (1969) have shown that attributing a lack of motivation to the frustrator led to the delivery of more intense shocks than attributing the frustration to a lack of ability when the shocks presumably could induce better performance and overcome the frustration. Rule and Hewitt (1971) interpreted their findings for "low-thwarted" Ss as consistent with those of Lanzetta and Hannah, although the aggressive response was not instrumental relative to frustration. They assumed that "low-thwarted" Ss attributed competence to the victim and thus used electrical shocks to help the other perform better.

The results reported by Lanzetta and Hannah (1969) and Rule and Hewitt (1971) suggested that when the cause of another's acts is attributed to something over which the other has some control, such as his motivational level, aggression may be used to induce changes in the others behavior through affecting the causal locus. The changes that would be effected would facilitate goal achievement for the aggressor (Lanzetta and Hannah, 1969) or goal achievement for the victim (Rule and Hewitt, 1971). This is the instrumental function of aggression.

Although the Lanzetta and Hannah and Rule and Hewitt studies reported findings relevant to attribution and the function of aggression, their findings need to be extended to include the hypothetical situation

analyzed above. In that situation p infers that o is the source of frustration and subsequent aggression cannot remove the thwarting. Lanzetta and Hannah examined aggression which could overcome frustration, and Rule and Hewitt's Ss were not likely to have linked the source of frustration to the victim. The victim had nothing to do with the frustration.

Summary and Hypotheses

A more fruitful analysis of the frustration aggression relationship may be obtained by an examination of two components of an aggressor's behavior, the function served by the aggressive response and the aggressor's cognitions concerning the intentions of the frustrator. Although Dollard and his colleagues proposed the frustration-aggression hypothesis to account for hostile aggression, many studies have examined the relationship within experimental paradigms that confound instrumental and hostile goals. In such instances frustration-produced aggression may be attenuated because of its instrumental effects. Harm to the instigator of frustration cannot be completely achieved when the outcome of aggression is beneficial to the victim. It is hypothesized that frustration which cannot be overcome by aggression will lead to aggression which serves a hostile function. However, hostile aggression will only obtain under conditions of intentional frustration. The function of the aggressive response must be appropriate to the inferred cause of frustration. Hostile aggression serves as retribution for intentional thwarting.

To assess these conjectures, an attempt was made to examine the effects of intentional frustration on aggression which unambiguously

served hostile or instrumental functions. Competence of the victim, frustration, and the function of aggression were factorially varied within a non-instrumental paradigm. Following Lanzetta and Hannah (1969), it was assumed that the failure of a competent person would be considered intentional as long as the failure could not be attributed to anything outside of the person himself. Furthermore, it was assumed that if it could be said that the competent person knew that his failure would bar another's access to a reward, then the one thwarted would consider the frustration an intentional consequence of the failure. On the other hand, the failure of an incompetent person should be attributed to his lack of ability, not an intention to fail or frustrate.

The greatest amount of aggression was expected to occur under conditions of frustration by a competent individual. Consequently, a significant frustration X competency interaction effect was predicted. The interaction effect was expected to reflect more aggression directed against the competent rather than the incompetent person especially under conditions of frustration.

When aggression served an instrumental function, it was expected that more aggression would be directed against the competent victim under conditions of no frustration than against the victims under any other condition. Aggression serving an instrumental function is enhanced only when the victim has the ability to perform well and merely needs an inducement to perform better. Furthermore, it will be utilized only when the victim has not previously intentionally frustrated the aggressor. When aggression served a hostile function, it was expected that more aggression would be directed against the competent victim

under conditions of frustration than against the victims under any other condition. In instances of intentional frustration, the hostile function of aggression will be engaged. Therefore, a significant frustration X competency of victim X function of aggression interaction effects was also predicted.

METHOD

1. Design and Overview

The experiment was divided into two phases. Manipulations of the perceived competence of the victim and frustration were introduced during phase I. Within phase II, the hostile and instrumental functions of aggression manipulation and an opportunity to aggress occurred. During the first phase Ss were introduced to a confederate, instructed in their first task, and then attempted to obtain a reward by teaching the confederate three concepts. As the second phase began Ss were told that they were to deliver electrical shocks to the confederate for errors committed during a learning task. E then explained the possible effects that increasing shock intensities may have on the other's performance and left the room. At the completion of this phase Ss were thoroughly debriefed and given experimental credit.

Subjects

The Ss were 136 male introductory Psychology students at the University of Alberta. Their participation in experiments was encouraged as partial fulfilment of the course requirements.

Apparatus and Materials

Experimental Room A. The S and E's confederate initially met in a room containing a large table and two chairs. The chairs were situated so that they faced one another across the table. The room contained a two-way mirror over which a curtain was drawn. On the table next to where the confederate was seated were placed a timing mechanism, a panel on which there was a circular array of buttons, and another rec-

tangular panel on which there were several buttons and toggle switches. This apparatus was ostensibly to be used by the confederate during the second phase of the experiment.

Experimental Room B. Twice during the experiment the S was separated from the confederate and placed in another room. This room was identical to Room A in design but furnished differently. There was a smaller table and only one chair. On the table was placed the shock delivery apparatus (described in detail below) and a panel studded with amber lights to designate the confederate's "performance" during the second phase of the experiment.

Recording Room. A room adjoining Experimental Rooms A and B was used by E to record the shock intensities selected by the S, and to operate a panel of switches which lit the amber lights on the panel in Room B. Shock intensities were recorded by reading a meter which was set in parallel with the circuit in shock delivery apparatus. From here E also operated two toggle switches which designated the beginning of a "trial" and the occurrence of an "error."

Shock Delivery Apparatus. This apparatus was a modified version of Buss' (1961) "aggression machine." It was equipped with a large, radial dial positioned in the centre of the machine's face. The S was led to believe that a shock intensity could be selected by turning the dial to a desired intensity, and that intensity delivered by pressing the shock delivery button.

The intensity of shock varied clockwise from 0 to 450. These intensities were described by eight labels separating ranges of intensity: slight shock - 0 to 50; moderate shock - 55 to 110; strong shock - 110 to 170; very strong shock - 170 to 225; intense shock - 225 to 280; extreme

intensity shock - 280 to 340; danger - 340 to 395; severe shock - 395 to 450. To enhance the credibility of the apparatus, a governor prevented S's from increasing shock intensities above 320. Ss were told that shocks above 320 were beyond the "medically safe limits" and that such shocks could produce "damage requiring medical attention, such as a burn."

Concept Learning Task (Phase I). E taught the S a concept learning task that he was to "teach" to the confederate. This task provided an opportunity for the manipulation of frustration. A more detailed description of this task is found in the Procedure section below.

Materials for the task included a stack of 33 index cards: 11 cards on which a series of letters were printed; 11 cards on which numbers appeared; 11 cards containing geometrical figures. Ss were also given response sheets on which to record the confederate's responses. Copies of these materials can be found in Appendix A.

Concept Learning Task (Phase II). The S was led to believe that during the second phase of the experiment (see Procedure section for detailed description of phase II) the confederate would be working with the apparatus in Room A in order to solve a conceptual problem. During this time the S was situated in Room B, and was to administer shocks each time an error signal appeared during the "learning trials." The purpose of this task was to provide several opportunities for Ss to display aggression.

Materials for this task included a panel of 60 amber lights indicating correct (light on) and incorrect (light off) responses during the course of the task, a red "ready" light, and a red "error" light. All these lights were operated by E from the Recording Room. A record of

performance on the "practice trials" was reported by Ss on response sheets (see Appendix A) made available by E.

Questionnaire. Upon concluding the experiment each S was requested to fill out a questionnaire concerning his reactions to the experiment (see Appendix B). Using a seven point Likert Scale, the S rated his feelings during the two phases of the experiment, the difficulty of his and the confederate's task during phase I, the importance of the reward offered him during phase I, the confederates' ability and motivation, and the confederates' overall performance. He also described the confederate using bipolar, evaluative adjectives on a seven point scale, and rated the effects of shocks on two nine point Likert Scales. There were two additional questions which required Ss to write out their answers. These covered the Ss perception of the confederate's understanding of the purpose of the shocks and any general comments Ss wished to make.

Procedure

When both the S and E's confederate arrived outside Experimental Room A they were escorted inside and seated facing one another. They were both given the following general instructions:

The experiment you will participate in has been designed to investigate the effects of certain types of conceptual experience on an individual's ability to form concepts. Today is the second half of testing and it will consist of two parts. There will be a 10 min. training phase and a 20 min. learning phase. Now this fellow here [E points to confederate] has already taken part in the first half of testing. His task today will be to learn several types of concepts . . . In the first phase today you will be taught 3 concepts by this fellow here [S]. He will function as the experimenter. We have decided to use naive experimenters in this

experiment in order to eliminate the possibility of what we call experimenter bias. That is, an experimenter's sophistication in a particular experiment can bias results in favor of his hypotheses.

E then directed his comments primarily to the confederate, but making certain that the Ss overheard clearly. The purpose in this was to lead the S to believe that he could gain monetarily from the confederate's performance and conversely. E commented:

Now, as you recall, the second phase today will consist of your working alone with this machine here. Our experimenter's task will be to deliver electric shocks for each error that you make during that time. You will also recall that you will be paid \$3.00 if you succeed in solving the problem displayed by the machine.

The experimenter will also earn \$3.00 if he performs well during the first part or training phase. These incentives are offered so that we may obtain the best possible performance from both of you.

Speaking to the both of them he said:

Now before I give you your instructions please note that since one of the tasks involves the giving and receiving of electrical shocks, you are free to withdraw from the experiment. It is your prerogative . . . Do either of you wish to withdraw?

E then spoke to the confederate:

All right then. Your instructions will be found in the pamphlets in front of you. I doubt that you will have any difficulty in understanding them. If you have any questions please ask me when I return. The experimenter and I will be in another room and I will instruct him in what he is to do.

E directed the S into Experimental Room B, and gave the following instructions concerning the concept learning task for Phase I:

The concepts you will teach S are the following [pointing to the cards]:

Δ - triangle with lines

10 - the number "10"

C - the letter "C"

The subject is instructed to be looking for the relevant attributes (triangles, lines, the number 10, etc.) which make a card positive or negative. A positive card includes the entire concept; a negative one does not. For example, any card including a triangle with lines is positive; any card which does not is negative for the 1st concept. Will you now go through a few for me, stating whether it is positive or negative.

The S was then given a demonstration of the task. E presented the first set of cards (concept C) and explained one possible solution:

Since a negative card does not include the concept and since only one letter - C - determines the concept, none of the letters on the negative cards can possibly represent it. So, if you compare the letters from the negative cards with the positive ones you can, by a process of elimination, find out the concept - C. The same with the number - 10. The triangle-with-lines is more difficult. Do you have any questions?

If there were no questions or, if there were, after the questions were answered, E explained about timing the trials and completing the task.

Now, I want you to read this information to the subject before you begin to present the cards for each concept. This will give him some idea of which attributes he is looking for. You will then present each card and state whether it is positive or negative.

With this stopwatch I want you to time the trials. You are to wait 10 sec. for a reply to the presentation of each card. If there is no reply, place the card on the table and write "NR" for "no response" on the score sheet in front of you. If the subject makes

a guess before the 10 sec. are up place the card face down on the table and record the response on the score sheet. Also, you are to wait 10 sec. between trials, i.e. 10 sec. from the time the subject makes a guess or the time is up for that trial, to the presentation of the next card. These time intervals are very important determiners of performance so please be accurate. When the subject makes a correct guess, go on to the next concept immediately, first reading the information to him and then presenting the card, stating whether it is positive or negative. Remember, you have only ten minutes to teach him these three concepts.

When the S seemed to understand what he was to do, E reintroduced the incentive deception. This formed the basis for the frustration manipulation. With one-half of the Ss the confederate "learned" all three concepts (No Frustration) and the Ss expected to have been paid \$3.00 in addition to receiving experimental credit. With the other one-half of the Ss the confederate learned only the first two concepts --the letter C and the triangle-with-lines (Frustration), and Ss expected to receive only experimental credit. Ss were told:

I know you will endeavor to perform at your best, but we have found that there are numerous factors determining one's performance in tasks like yours. Of major importance, is your motivation to succeed. It is also of major importance to us during this part. We wish the subject to gain as much experience with the concepts and the manner of presentation as possible. So we have decided to offer our experimenters a three dollar incentive. If you teach the subject all three concepts you will be paid three dollars. If you teach him only one or two you will not receive any money. Do you have any questions?

In order to lead Ss to attribute the confederate's failure to learn all three concepts to either a lack of ability or an intention to fail, E described the confederate's performance on the first half of the ex-

periment:

I should tell you something about your subject, before we begin. As I said earlier, today is the second half of this experiment. During the first half your subject performed a concept learning task the difficulty of which was, oh, about the same as this first task today. Your subject, let me see now . . .

E consulted a "record sheet" and for one half of the Ss (Competent Partner) he stated:

Well, he did extremely well on that first part and should have an easy time with this task.

or, for the other half of the Ss (Incompetent Partner):

Well, (pause) he did rather poorly on that first part and should have quite a bit of difficulty with this task.

E then asked if there were any questions and directed the S back to Experimental Room A. The S was seated again facing the confederate, and was told so that the confederate could hear:

Now remember you have ten minutes in which to teach him all three concepts. You must teach him all three in order to earn the three dollars. I will time you by this stopwatch. When you begin, I'll start the stopwatch and return after ten minutes.

The task began, and E left the room. After ten minutes he returned and said to the half that failed:

Haven't you finished? . . . Well, I'm sorry but your time is up. You must stop now . . . Please get the cards in order.

To the other half that completed the task, E said:

Ah, very well done . . . Would you please get the cards in order.

When the S was collecting materials, E "prepared" the confederate

for Phase II. E applied two electrodes in full sight of the S to the confederate's right arm. The confederate was then instructed:

Now remember I will not be with you during this phase of the experiment so if you have any questions you must ask them now . . . I will return when the experiment is over and remove the electrodes. The experiment will be completed in one of two ways: (1) When you solve the problem presented by the machine or (2) When you have gone through 50 trials without doing so. Remember, the more correct responses in succession the closer you are to a solution. So work fast and carefully.

The S then returned with E to Experimental Room B. After E and the S left, the confederate entered the adjoining Recording Room and waited to aid E with recording the S's responses.

Once in Experimental Room B, E introduced the S to the shock delivery apparatus, his task, and began to introduce the Function of Aggression manipulation by the following remarks:

The machine in front of you is a current generator. It will deliver an electric shock through the electrodes on the subject's arm at whatever intensity you set on this dial. You are to give one shock each time the subject makes an error between trials 11 and 50 at whatever intensity you consider appropriate. This light indicates the beginning of a trial, this one a correct response, and this an error. The intensity dial should be set at the beginning of each trial and the shock should be given as soon as the error light comes on. There will be about an average of 10 sec. between each response which should give you plenty of time to make necessary adjustments.

Remember you are to deliver shocks only during trials 11 to 50. Those are the learning trials. Do not give any shocks during trials one to ten. Those are the practice trials.

Now, the effects of shock on performance in

circumstances such as these are quite varied, and some of the differences observed have been found to be determined by personal traits. With some people performance becomes better as shock intensities are increased, and with others we find just the opposite, as shock intensities are increased the person's performance becomes worse. Occasionally, we have found that shock does not affect certain person's performance one way or the other. As far as the specific effects of shock intensities in this experiment are concerned, we are not prepared to monitor and analyze them. We are solely concerned with the effects of pre-training. Whatever idiosyncracies there may be will be random across experimental groups and statistically partialled out, anyway. Therefore, with regard to specific instructions pertaining to the use of shock in this task, all I can say is that it is simply up to your own discretion.

In all circumstances shock does, however, provide instantaneous feedback for errors. Current research has shown that temporal characteristics of feedback affect information processing such that for best results there should be little pause between an error and a shock. That is why it is so necessary for you to press and release the shock button as soon as the error signal appears. Are there any questions?

When the S seemed to understand the task he was to perform, E laid the foundation for the Function of Aggression manipulation which occurred during the "practice trials." To accomplish this the S was asked to attend to the "subject's" performance during the first 10 trials. He was told that performance during these trials indicated the possible effect of increasing shock intensity during trials 11 to 50. The S was given a response sheet (see Appendix A) indicating three performance categories: Type I--seven or more correct; Type II --three or fewer correct; Type III--between four and six correct. He was then asked to score the "subject's" performance by checking the appropriate category. E then explicitly stated the relationship be-

tween the category and the effects of shock. The number of correct responses during the practice trials thus served as the manipulation. A facilitative effect of increasing shock intensities was determined by two correct responses, and an inhibitory effect by eight. The no effect on performance condition was determined by five correct responses. E introduced the manipulation by the following remarks:

Oh yes, one other thing. We would like to obtain some auxillary data. Would you please mark down the number of correct responses that the subject makes on the first ten trials. These are the practice trials. They function to get the subject familiar with the operation of the machine. Since he will be alone during this phase they are necessary as an instructional device. While the quality of performance on these trials is not related to the performance on the remaining trials, we have found a relationship between performance during practice and shock effects. It seems that the type I individual is usually one whose performance becomes better as shock intensities are increased and that the type II individual usually performs worse as shock intensities are increased. The type III individual usually shows little difference in his performance no matter what shock intensity is used.

Unless you have any questions, I will go to the room which separates you and the other subject to activate your machine and the subject's.

After the S was ready to begin E left for the Recording Room and phase II began. Following the completion of trial 50 E returned, had the S fill out a questionnaire and debriefed him. Debriefing consisted of an openended interview, the initial portion of which, was to establish the perceived credibility of the experimental situation and to examine the S's understanding of instructions. Following this the nature of the deceptions were revealed and the necessity of their use was explained. At this time the actual purpose of the experiment was also

briefly described. When E was assured the the S understood sufficiently and was at ease with his part in the experiment, he was given experimental credit and thanked for his participation.

RESULTS

Summary of Experimental Design

Of 136 Ss who participated in this study, 120 Ss were retained in the analyses of the data. Three Ss were eliminated from the analyses because of suspicion, three because of apparatus failures, seven for misunderstanding or forgetting instructions, one because of an error on the part of the confederate, one due to an error by E, and one for failing to deliver shocks throughout the "learning trials." All Ss were randomly assigned to conditions within a 2 x 2 x 3 x 5 factorial design with repeated measures. The conditions assigned between Ss included: frustration, no frustration; competent partner, incompetent partner; facilitative effect of increasing shock intensity on performance, no effects of increasing shock intensity on performance, inhibitory effect of increasing shock intensity on performance. Repeated measures were taken over 20 shock trials, but were grouped into five sets of four trials each.

The major dependent measure was the intensity of shock ostensibly delivered to the confederate. Auxiliary measures were taken from questionnaire data and an evaluation of the confederate on a series of bipolar adjective scales. The former measures served as checks on the experimental manipulations, while the latter functioned to supplement the findings from the major dependent measure.

Checks on the Experimental Manipulations

Frustration. Frustration was operationally defined as the presentation of a barrier to a goal. Thus, the confederate's failure to learn all three concepts in the requisite time fits the operational cri-

teria of frustration since it blocked the S's attainment of three dollars. However, it is relevant to ask whether the Ss considered the acquisition of three dollars important, how difficult they apprehended their task to be, how difficult they considered the other's task, and what impact the outcome had for them. These questions are necessary in order to ascertain whether the Ss were actually engaged in pursuing the goal and whether they believed it was reasonably attainable. Unless it can be said that the Ss were actively pursuing the thwarted goal, no claims can be made about the presence of frustration. Furthermore, in order to satisfy the conditions under which the hypotheses generated by this thesis were presented it is necessary to show that nothing or no one other than the confederate could be the source of frustration.

Several seven point scale items on the post-experimental questionnaire were designed to tap the Ss' involvement in and perception of phase I of the experiment. Ss rated the importance of gaining or losing three dollars as of low-moderate importance ($\bar{X} = 3.16$). The results of the $2 \times 2 \times 3$ analysis of variance yielded no significant effects. They rated the difficulty of their task at little difficulty ($\bar{X} = 2.12$), and there were no significant effects. The confederate's task was apprehended as being a little more than moderately difficult ($\bar{X} = 4.69$) and a significant interaction effect appeared as a result of frustration and the effects of shock on performance ($F = 4.26$, $df = 2/108$, $p < .05$). There was a greater difference between the ratings of task difficulty by frustration and no frustration groups under the no effects on performance condition than under the facilitative effects or inhibitive effects of shock on performance condition. Under the no

effects condition, the frustration condition's mean rating was 5.20 and 4.20 for the no frustration condition. The differences between these groups were smaller under the facilitative and inhibitive effects conditions with means of 4.40 under frustration and 4.75 under no frustration, as compared to 4.60 under frustration and 4.90 under no frustration, respectively. However, Ss were quite confident ($\bar{X} = 5.13$) that they could perform as well as E expected. No significant effects appeared on the confidence measure.

The evidence suggested that the acquisition of the goal to be blocked by the confederate's failure was not particularly significant to the S. Furthermore, it seems possible that he could have attributed one of the causes of the confederate's failure to the difficulty of the latter's task. It was hoped that both the S's and the confederate's tasks in phase I would be considered rather easy. If so, it was assumed that they would not appreciably contribute to the determination of the source of the failure leading to frustration.

Analyses of questionnaire items pertaining to the impact of the frustration manipulation yielded several significant findings. Frustrated Ss were more annoyed, fed-up, up-set, less satisfied, and more disappointed than non-frustrated Ss. Table 1 presents F ratios and mean values for these differences.

Table 1

F Ratios and Mean Ratings From ANOVA of Mood Scales

Mood	F	df	p	\bar{X} for frustration	\bar{X} for no frustration
annoyed	21.16	1/108	<.001	2.55	1.53
fed-up	17.62	2/108	<.001	2.10	1.21
up-set	6.51	1/108	<.05	2.57	1.88
satisfied	34.19	1/108	<.001	4.27	5.80
disappointed	47.09	1/108	<.001	3.38	1.63

Significant effects also appeared in the analyses of the annoyance and disappointment measures as a result of manipulations other than frustration. Less annoyance was reported under the facilitative effects condition than in the no effects or inhibitory effects of increasing shock intensities on performances ($F = 3.18$, df 2/108, $p < .05$). The mean ratings were 1.65, 2.78, and 2.20 respectively. Whether or not the partner was competent produced a significant main effect in the ratings of disappointment ($F = 4.11$, $df = 1/108$, $p < .05$). Ss with competent partners were more disappointed ($\bar{X} = 2.76$) than those whose partners were rather incompetent ($\bar{X} = 2.25$).

As for Ss "anger," frustrated Ss were more angry than non-frustrated Ss ($\bar{X} = 1.58$ and $\bar{X} = 1.21$ respectively). A frustration \times competency \times the function of aggression interaction effect also appeared (see Appendix C for summary ANOVA table and Appendix D for table of means). There was a greater difference between the differences in reported level of anger in the frustration and no frustration groups when the partner was considered competent and increasing the intensity

of shock was not supposed to have any effect on performance. However, this interaction effect is uninterpretable at this time.

While Ss may have attributed the confederate's failure to some extent to the difficulty of his task, it is evident that the frustration manipulation did have an emotional impact. This suggests that Ss were involved even though they did not report that the three dollar reward was "very important." However, the reliability of these ratings as indicators of Ss' emotional and cognitive state just prior to their opportunity to aggress (phase II) is problematic. Ratings were not obtained immediately preceding phase II, but subsequent to it. Furthermore, while Ss were asked to make their ratings related to the frustration manipulation in phase I independent of their reactions to phase II (see Questionnaire, Appendix B), the presence of significant effects due to the function of aggression manipulation occurring in phase II indicates confusion. Either Ss misunderstood instructions or they were unable to report about their experience in phase I independently of their reactions to phase II.

Competency. The confederate's competency was manipulated by E's description of his past performance on a similar task. Results of the manipulation were examined by means of two seven point scale items which questioned the confederates capability and effort in phase I.

Significant effects resulted from a 2 x 2 x 3 analysis of variance on the ratings of capability due to both frustration and competency (see Appendix C for summary ANOVA table). Frustrated Ss rated the confederate as less capable than did non-frustrated Ss ($\bar{X} = 4.70$ and $\bar{X} = 5.53$ respectively). When E described the confederate as competent by past performance he was rated as more capable than if E described him

as incompetent ($\bar{X} = 5.72$ for competent partner and $\bar{X} = 4.52$ for incompetent partner). As for the amount of motivation attributed to the confederate, significant effects again appeared for both frustration and competency (see Appendix C for summary ANOVA table). Frustrated Ss rated the confederate as trying less in comparison with non-frustrated Ss ($\bar{X} = 4.83$ and $\bar{X} = 5.68$ respectively). Ss rated the "competent" confederate as trying harder than when he was described as incompetent ($\bar{X} = 5.58$ and $\bar{X} = 4.93$ respectively). An additional finding occurred with-in the mood items used to assess the impact of the frustration manipulation. Ss with the competent partner reported more "fear" than those working with the incompetent partner ($F = 5.16$, $df = 1/108$, $p < .05$, $\bar{X} = 2.87$ and $\bar{X} = 2.23$ respectively).

The evidence indicated that judgements of the confederates competency were confounded by whether or not he failed during phase I. In order for the appropriate attributions to be unambiguously determined, it is necessary that there be a clear distinction between the competent and the incompetent on the basis of their respective abilities and effort. In addition, their success or failure should not appreciably alter these characteristics. Unfortunately, the evidence of confounding effects and the difference resulting from the ratings of effort show that the conditions leading to the appropriate attributions were not completely satisfied. The evidence questions the nature of the attributions present upon the conclusion of phase I.

Effects of Shock on Performance. Two questionnaire items were designed to check whether Ss conceived of the effects of shock in phase II as E had expected. Responses were made on nine point scales and 2 x

2 x 3 analyses of variance were performed on the data. A rating of one indicated that the shock "hindered performance greatly," a score of five meant that it "had no effect on performance," and a score of nine indicated that it "improved performance greatly." When asked what the effects of increasing shock intensities should have been, Ss in the facilitative effects of shock condition responded with a mean rating of 7.75 as compared to a mean of 5.12 in the no effects on performance condition and 2.25 in the inhibitive effects condition ($F = 361.30$, $df = 2/108$, $p < .001$). In terms of the mean values and the verbal labels attached to these values, the effects diminished considerably when Ss were asked what effects increasing shock intensities actually had on performance (see Appendix C for summary ANOVA table). Ss in the facilitative effects condition produced a mean rating of 5.82 as compared to a mean of 5.05 in the no effects on performance condition and 3.87 in the inhibitive effects condition. An interaction effect as a result of frustration conditions and the actual effects of shock on performance also appeared. Frustrated Ss rated the effects of shock on performance as less facilitating ($\bar{X} = 5.40$) and more inhibitive ($\bar{X} = 3.40$) under those respective conditions than did the non-frustrated Ss ($\bar{X} = 6.25$ and $\bar{X} = 4.35$ respectively). Under the no effects of shock on performance condition, frustrated Ss rated the shock on the facilitative side ($\bar{X} = 5.35$) and non-frustrated Ss rated it on the inhibitive side ($\bar{X} = 4.75$).

Orthogonal comparisons were performed to determine whether differences obtained between the means for each function of aggression were significant. On the "what should the effect have been" item the means 7.75 and 5.12 were significantly different from one another ($t = 12.848$,

df = 108, $p < .001$ one tailed) as were the means 5.12 and 2.25 ($t = 14.02$, df = 108, $p < .001$ one tailed). Similar findings occurred with the "what effects increasing shock intensities actually had on performance" item. The mean 5.83 was significantly greater than the mean 5.05 ($t = 2.31$, df = 108, $p < .025$ one tailed) as were the means 5.05 and 3.88 ($t = 3.47$, df = 108, $p < .005$ one tailed).

It was hoped that the effects of increasing shock intensities would be unambiguously apprehended. Statistical analyses present evidence indicating that the manipulation was effective in the expected directions. Yet, a consideration of the verbal labels attached to the scale values questions the clarity of the manipulation. The mean differences in terms of verbal labels (see copy of questionnaire, Appendix B) for the actual effects on performance were not as great as anticipated.

Results of Major Dependent Measure--Intensity. A $2 \times 2 \times 3 \times 5$ repeated measures, analysis of variance was performed on the shock intensity data grouped in five trial blocks. Each block was composed of four shock trials. Results of the analysis indicated only one significant effect due to trial blocks ($F = 45.15$, df = 4/108, $p < .001$). Since no effects were obtained as a result of the function of aggression manipulation while they have in a previous study (Buss, 1966), the effects of that manipulation were more carefully scrutinized. Noting that a discrepancy resulted between the ratings of "what effects should increasing shock intensity have had" and ratings of the actual effects, it appears that Ss may have "experimented" with shock intensity selection, increasing error variance and obliterating predicted effects. This is

consistent with the findings that variance increased across trial blocks (see Appendix D for a graph of variance across blocks of shock trials). The variance of the final block of shock trials was more than double that of the first block. Therefore, a 2 x 2 x 3 analysis of variance was carried out on the sum of the intensities of shock delivered during the first four shock trials. The alternative analysis revealed a significant frustration X competency interaction effect ($F = 6.60$, $df = 1/108$, $p < .05$). No other effects were significant. Under conditions of frustration more intense shocks were delivered to the incompetent partner, whereas under conditions of no frustration the competent partner received the most intense shocks. However, neither simple main effect for frustration was significant.

Table 2
Mean Shock Intensities Delivered Under
Conditions of Frustration and Competency of Victim

Condition	Incompetent Victim	Competent Victim
Frustration	69.25	48.08
No Frustration	50.13	66.67

Results of the Evaluative Data

Ratings based on bipolar, evaluative adjectives on five point scales served as auxiliary data. The scores on 13 adjective pairs were summed, and the total scores analyzed by a 2 x 2 x 3 analysis of variance. There were 9 Ss per cell because of missing data.

Results of the analysis revealed two significant main effects due to frustration and competency (see Appendix C for summary ANOVA table). Frustrated Ss rated their partner less positively ($\bar{X} = 56.22$) than non-frustrated Ss ($\bar{X} = 60.79$). Similarly, Ss with an incompetent partner rated him less positively ($\bar{X} = 55.65$) than did those with a competent partner ($\bar{X} = 61.37$).

DISCUSSION

The purpose of the present experiment was to examine cognitive determinants of aggression. Components of an individual's interpretation of a frustrating interaction were considered. Essentially, it was proposed that it is not frustration per se which is an antecedent of aggression, but causal attributions which obtain within a particular context. Attributing the cause of another's actions to an intention to thwart was hypothesized to lead to hostile aggression. Results from analysis of the data over all experimental trials failed to support this contention. However, findings from checks on the experimental manipulations question the appropriateness of Ss' perceptions of the experimental situation. Further research is needed to create the intended perceptions.

An alternative analysis was performed which included only the data from the first four shock trials. It was hoped that this strategy would minimize the possible effects of Ss' "experimentation" with shock intensity selection, and present auxiliary information pertinent to the hypotheses. While the results of the alternative analysis failed to reveal the expected interaction effects, the one significant finding can be tentatively interpreted in terms consistent with the rationale of this study. As the frustration X competency interaction illustrates, the competent partner received less intense shocks following frustration than following no frustration, whereas the converse obtained for the incompetent partner. This result is consistent with the hypotheses if two rather tentative assumptions are made. These are that Ss implicitly assumed that increasing the intensity of shock could have a net facilitative effect on performance, and that Ss attributed some degree of intention to

the incompetent's failure.

The former assumption is plausible in terms of the possibility that the function of aggression manipulation actually failed to have the intended impact and that Ss' own assumptions guided their selection of shock intensities. Ss simply may not have heeded E's instructions concerning the effects of shock during phase II. Findings from analyses of the experimental checks on the effects of shock intensities may not accurately reflect judgements which determined shock intensity selection. The item regarding the effect that increasing shock intensity should have had on performance may have simply examined Ss' memory of E's instructions. The item requesting Ss to rate the actual effects of shock intensities may have tapped beliefs which formed the criteria for shock intensity selection. However, the analysis of this item yielded mean differences which, in terms of their verbal labels, reflected small differences. Much larger differences were anticipated and seem necessary as evidence of propositions strongly influencing shock intensity selection. Although Ss may not have followed instructions, they may have begun phase II with an implicit assumption that increasing the intensity of shock could decrease the number of errors depending upon the competency of their partner. During subsequent trials they may have tested this assumption, and then others.

Ss, furthermore, may have attributed the incompetent partner's failure to his lack of sufficient motivation. Both incompetency and failure were associated with lowered judgements of the amount of effort the partner put forth during phase I. It is plausible that he was viewed as someone who, while perhaps incapable of doing well, should

have at least tried harder. Perceiving a lack of intensive effort may then have been used as evidence of some intention to fail.

If these two assumptions concerning shock intensity selection and the intentions of the incompetent who failed are valid, the interaction effect is interpretable. Assuming that increasing shock intensity could potentially decrease errors and lead to a reward, reciprocal harm would best be expressed following frustration through physically hurting the incompetent and withholding "aid" to the competent. Since the incompetent partner was perceived as lacking in ability, increasing shock intensity served to hurt without providing much incidental benefit. On the other hand, giving less intense shocks to the competent partner served to reduce the possible facilitating effect of shock. Rather than serve an instrumental function by inducing better performance through intense shocks, Ss may have given less intense shocks in order to interfere with the competent partner's acquisition of a reward. Giving less intense shocks may have served as repayment in kind for the effects of the competent victim's actions during phase I.

Under conditions of no frustration no redressive attempts would have been appropriate. Here also, increasing the intensity of shock would be more beneficial to the competent than to the incompetent victim. Thus, as expected, more intense shocks were delivered to the former. This part of the interpretation is consistent with the findings of Lanzetta and Hannah (1969) and Rule and Hewitt (1971).

An alternative interpretation is possible. Frustration may have led to hostile aggression regardless of the inferred intentions of the frustrator. The difference in shock intensities delivered under no

frustration can be understood in the same terms used in the previous interpretation. Aggression is of greater instrumental value to the competent victim and, therefore, he received more intense shocks. On the other hand, under frustration, the difference in inferred ability between the two victims contributed to the likelihood that increasing the intensity of shock would serve a hostile function. If the goal of frustration-produced aggression, is harm to "the instigator of frustration," it was most clearly available in relation to the incompetent partner. Little incidental benefit should have resulted from increasing the intensity of shock delivered to him. Consequently, he received more intense shocks. This is consistent with both the hypothesis that the instrumental consequences of aggression attenuate frustration-produced aggression, as well as the original frustration aggression hypothesis (Dollard, et al., 1939).

A final interpretation of the data may be given in terms of Ss' dislike for incompetence. Berkowitz (1965b) has shown that dislike leads to aggression. Ss' dislike for the target may be reflected in the results obtained in the analysis of the evaluations of the confederate. The results indicate that both incompetency and frustration were associated with less positive evaluations. Their additivity could represent a ranking in degree of dislike from the incompetent who failed to the incompetent who succeeded and the competent who failed. The former may have been disliked the most and the latter two may have been approximately similar in degree of dislike. The competent partner who succeeded would then have been the most liked. This ranking corresponds to the mean values obtained from the evaluation data, and

the differences in aggression intensities delivered to the former three victims. However, the competent partner who succeeded received more intense shocks than can be accounted for as a function of dislike. Apparently, Ss may have selected shock intensities to serve an instrumental function in response to errors committed by the successful, competent partner and to serve a hostile function in response to errors obtained under the other conditions.

Each of the three interpretations contend that Ss assumed increasing shock intensity could serve an instrumental function. The latter two interpretations make no assumptions concerning inferences of the frustrator's intentions. On the basis of parsimony alone one may be led to discount the first interpretation and attempt to chose one of the alternatives. However, no evidence emerged from analyses of the data which would support any one of the interpretations above the other two.

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Appendix A

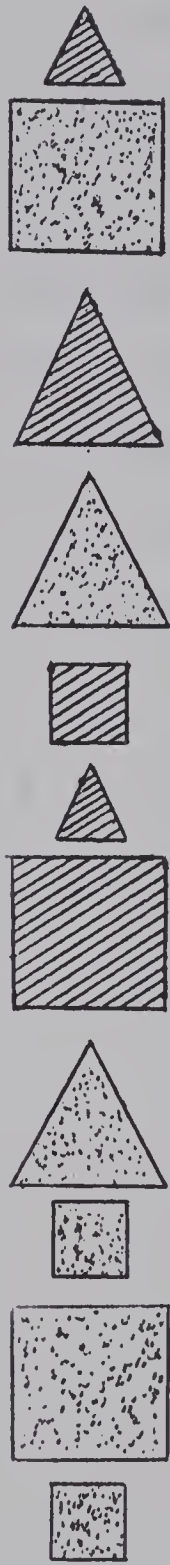
Experimental Materials

I. Stimuli for concept formation task in phase I (each stimulus complex appeared on a separate 4" x 7" card).

A. Concept 1 - "the letter C"

C	E	H	I	K
D	E	H	J	L
C	F	H	I	K
D	F	G	I	L
C	E	G	I	K
D	F	G	J	K
C	F	H	J	K
D	E	G	J	K
C	E	H	J	L
D	E	H	I	L
C	F	G	I	L

B. Concept 2 - "a triangle with lines"



C. Concept 3 - "the number 10"

4 6 8 9 12

3 5 8 10 11

3 6 7 9 12

3 6 8 10 11

4 6 7 9 11

3 5 8 10 11

4 6 8 9 12

4 5 8 10 11

4 5 8 9 12

3 6 7 10 11

4 6 7 9 11

II. "Performance" displayed to Ss during the concept formation task in phase II.

A. Performance in practice trials (trials 1 through 10) which determined the function of aggression during experimental trials.

Facilitative Effects Condition		No Effects Condition		Inhibitory Effects Condition	
Trial	Performance	Trial	Performance	Trial	Performance
1	error	1	correct	1	correct
2	error	2	correct	2	error
3	correct	3	error	3	correct
4	error	4	error	4	correct
5	error	5	correct	5	correct
6	error	6	error	6	correct
7	correct	7	correct	7	error
8	error	8	error	8	correct
9	error	9	correct	9	correct
10	error	10	error	10	correct

B. Performance in experimental trials (trial 11 through 50).

Each error was followed by one shock and performance was constant across all conditions.

Trial	Performance	Trial	Performance
11	correct	31	correct
12	<u>error</u>	32	<u>error</u>
13	correct	33	<u>error</u>
14	correct	34	<u>error</u>
15	<u>error</u>	35	correct
16	<u>error</u>	36	correct
17	correct	37	<u>error</u>
18	<u>error</u>	38	correct
19	correct	39	<u>error</u>
20	correct	40	correct
21	correct	41	<u>error</u>
22	<u>error</u>	42	correct
23	<u>error</u>	43	correct
24	correct	44	correct
25	<u>error</u>	45	<u>error</u>
26	<u>error</u>	46	correct
27	<u>error</u>	47	<u>error</u>
28	correct	48	<u>error</u>
29	correct	49	<u>error</u>
30	correct	50	<u>error</u>

total shock trials = 20

Subject No. _____

Number of correct responses during practice trials (first 10 trials).

Check one.

☐

TYPE I: 3 correct responses or less.

☐

TYPE II: 7 correct responses or more.

☐

TYPE III: Between 4 and 6 correct responses.

Questionnaire

TRAN-TRAIN PROJECT: NV213

51.

POST-SITUATIONAL QUESTIONNAIRE

Department of Psychology

Age ____

Experimenter No. ____

Training Phase. Because your performance was so important in the training phase, we would like you to answer the questions below. Your answers to these questions will allow us to more adequately assess your performance and the experiment in general.

1. How confident were you in achieving what the researcher expected of you?

Very confident _____ Not at all confident

2. How satisfied were you with the training session?

Very satisfied _____ Not at all satisfied

Very disappointed _____ Not at all disappointed

3. How difficult was the task you were asked to perform?

Very difficult _____ Not at all difficult

4. How difficult was the task the subject was asked to perform?

Very difficult _____ Not at all difficult

5. How important was the gaining or losing the \$3.00 to you?

Very important _____ Not at all important

6. Rate the other subject's performance.

He tried very hard _____ He did not try at all

He was very capable _____ He was not capable at all

7. Rate your feelings during the training phase.

Very involved _____ Not at all involved

Very annoyed _____ Not at all annoyed

Very attentive _____ Not at all attentive

Very upset _____ Not at all upset

Very fed-up _____ Not at all fed-up

Very energetic _____ Not at all energetic

Very fearful _____ Not at all fearful

Very angry _____ Not at all angry

II. Learning Phase. We are primarily concerned with the other subject's performance during the learning phase. Your answers to the following set of questions will aid us in our assessment of his performance and also help us to perfect our experimental design.

1. How would you characterize the subject's overall performance during the learning phase?

excellent | | | | | | | Very poor

2. What do you think the other subject perceived as the purpose of the shocks?

3. What effect did the increasing shock intensity have on the other subject's performance?

improved performance greatly | | | | | | | | | | | | | Hindered performance greatly
 had no effect on performance

4. Do you think that generally physical punishment is an effective means of behavioral control?

strongly agree | | | | | | | | | | | | | strongly disagree

5. Rate your feelings as they are at this very moment.

Very involved | | | | | | | | | | | | | Not at all involved

Very annoyed | | | | | | | | | | | | | Not at all annoyed

Very attentive |-----| Not at all attentive

Very upset |-----| Not at all upset

Very fed-up |-----| Not at all fed-up

Very energetic |-----| Not at all energetic

Very fearful |-----| Not at all fearful

Very angry |-----| Not at all angry

Very tired |-----| Not at all tired

Very insecure |-----| Not at all insecure

Very active |-----| Not at all active

Very sluggish |-----| Not at all sluggish

Very carefree |-----| Not at all carefree

Very drowsy |-----| Not at all drowsy

6. Any general comments?

Appendix C

Summary Tables of Analysis of Variance

Table 3

Analysis of Variance for Importance of
Gaining or Losing the Three Dollars During Phase I

Source	df	SS	MS	F
F	1	.83	.83	0.00
C	1	1.41	1.41	0.42
E	2	1.21	.56	0.17
F X C	1	6.08	6.08	1.81
F X E	2	12.02	6.01	1.79
C X E	2	13.52	6.76	2.02
F X C X E	2	2.15	1.08	0.32
S (FCE)	108	361.69	3.35	

Table 4
Analysis of Variance for
Difficulty of Ss' Task During Phase I

Source	df	SS	MS	F
F	1	.68	.68	0.51
C	1	1.01	1.01	0.76
E	2	.35	.18	0.13
F X C	1	.83	.83	0.01
F X E	2	5.55	2.78	2.09
C X E	2	6.02	3.01	2.26
F X C X E	2	7.82	3.91	2.94
S (FCE)	108	143.70	1.33	

Table 5
Analysis of Variance for
Difficulty of Partner's Task

Source	df	SS	MS	F
F	1	.68	.68	0.42
C	1	.41	.41	0.26
E	2	.82	.41	0.26
F X C	1	.83	.83	0.01
F X E	2	13.55	6.78	4.26*
C X E	2	.52	.26	0.16
F X C X E	2	5.72	2.86	1.80
S (FCE)	108	171.90	1.59	

* $p < .05$

Table 6
Analysis of Variance for
Ss' Confidence During Phase I

Source	df	SS	MS	F
F	1	.30	.30	0.27
C	1	.30	.30	0.24
E	2	1.27	.63	0.51
F X C	1	0.00	0.00	0.00
F X E	2	4.20	2.10	1.69
C X E	2	7.40	3.70	2.97
F X C X E	2	1.80	.90	0.72
S (FCE)	108	134.60	1.25	

Table 7
Analysis of Variance for Annoyance

Source	df	SS	MS	F
F	1	31.01	31.01	21.16**
C	1	.83	.83	0.01
C	2	9.32	4.66	3.18*
F X C	1	1.41	1.41	0.96
F X E	2	2.72	1.36	0.93
C X E	2	2.52	1.26	0.86
F X C X E	2	3.52	1.76	1.20
S (FCE)	108	158.30	1.47	

* $p < .05$

** $p < .001$

Table 8
Analysis of Variance for Fed-Up

Source	df	SS	MS	F
F	1	23.41	23.41	17.62*
C	1	.21	.21	0.16
E	2	1.27	.63	0.48
F X C	1	.21	.21	0.16
F X E	2	1.87	.93	0.70
C X E	2	.67	.33	0.03
F X C X E	2	.47	.23	0.18
S (FCE)	108	143.50	1.33	

*p<.001

Table 9
Analysis of Variance for Up-Set

Source	df	SS	MS	F
F	1	14.01	14.01	6.51*
C	1	2.41	2.41	1.12
E	2	2.60	1.30	0.60
F X C	1	3.01	3.01	1.40
F X E	2	11.67	5.83	2.71
C X E	2	.47	.23	0.11
F X C X E	2	6.47	3.23	1.50
S (FCE)	108	232.30	2.15	

*p<.05

Table 10
Analysis of Variance for Satisfied

Source	df	SS	MS	F
F	1	70.53	70.53	34.19*
C	1	.13	.13	0.06
E	2	2.32	1.16	0.56
F X C	1	1.20	1.20	0.58
F X E	2	5.42	2.71	1.31
C X E	2	.22	.11	0.05
F X C X E	2	1.25	.63	0.30
S (FCE)	108	222.80	2.06	

*p<.001

Table 11
Analysis of Variance for Disappointed

Source	df	SS	MS	F
F	1	91.88	91.88	47.09**
C	1	8.01	8.01	4.11*
E	2	2.22	1.11	0.57
F X C	1	.41	.41	0.21
F X E	2	.95	.48	0.24
C X E	2	1.02	.51	0.26
F X C X E	2	.82	.41	0.21
S (FCE)	108	210.69	1.95	

*p<.05

**p<.001

Table 12
Analysis of Variance for Anger

Source	df	SS	MS	F
F	1	4.03	4.03	5.47*
C	1	.83	.83	1.13
E	2	2.60	1.30	1.76
F X C	1	.13	.13	0.18
F X E	2	1.27	.63	0.86
C X E	2	1.27	.63	0.86
F X C X E	2	5.07	2.53	3.44*
S (FCE)	108	79.60	.74	

*p<.05

Table 13
Analysis of Variance for Capability

Source	df	SS	MS	F
F	1	20.83	20.83	18.44*
C	1	43.20	43.20	38.24*
E	2	5.62	2.81	2.49
F X C	1	.13	.13	0.12
F X E	2	1.72	.86	0.76
C X E	2	1.55	.78	0.69
F X C X E	2	1.32	.66	0.58
S (FCE)	108	122.00	1.13	

*p<.001

Table 14
Analysis of Variance for Trying

Source	df	SS	MS	F
F	1	21.67	21.67	14.94**
C	1	12.68	12.68	8.74*
E	2	1.27	.63	0.44
F X C	1	3.67	3.67	2.53
F X E	2	1.80	.90	0.62
C X E	2	1.80	.90	0.62
F X C X E	2	1.40	.70	0.48
S (FCE)	108	156.70	1.45	

*p<.01

**p<.001

Table 15
Analysis of Variance for Fear

Source	df	SS	MS	F
F	1	1.20	1.20	0.51
C	1	12.03	12.03	5.16*
E	2	8.75	4.38	1.88
F X C	1	3.33	3.33	1.43
F X E	2	3.65	1.83	0.78
C X E	2	10.02	5.01	2.15
F X C X E	2	4.72	2.36	1.01
S (FCE)	108	251.99	2.33	

*p<.05

Table 16

Analysis of Variance for the Effects Increasing Shock Intensity Should Have on Partner's Performance

Source	df	SS	MS	F
F	1	.83	.83	0.01
C	1	.41	.41	0.49
E	2	605.42	302.71	361.20*
F X C	1	.41	.41	0.49
F X E	2	1.02	.51	0.61
C X E	2	4.32	2.16	2.58
F X C X E	2	.72	.36	0.43
S (FCE)	108	90.79	.84	

*p<.001

Table 17

Analysis of Variance for the Effects Increasing
Shock Intensity Actually Had on Partner's Performance

Source	df	SS	MS	F
F	1	4.80	4.80	2.11
C	1	.83	.83	0.37
F	2	77.12	38.56	16.91**
F X C	1	1.20	1.20	0.53
F X E	2	15.05	7.53	3.30*
C X F	2	2.92	1.46	0.64
F X C X E	2	1.05	.52	0.23
S (FCE)	108	246.19	2.28	

*p<.05

**p<.005

Table 18
Analysis of Variance for Shock
Intensity Data From Repeated Measures Design

Source	df	SS	MS	F
F	1	85801.00	85801.00	0.50
C	1	2795.04	2495.04	0.02
E	2	114521.5	57260.75	0.33
T	4	2963989.	740997.2	45.15*
F X C	1	520086.9	520086.9	3.01
F X E	2	306617.6	153308.8	0.89
C X E	2	443490.9	221745.4	1.29
F X T	4	55781.00	13945.25	0.85
C X T	4	100085.0	25021.25	1.52
E X T	8	221538.0	27692.25	1.69
F X C X E	2	589905.4	294952.7	1.71
F X C X T	4	39921.12	9980.28	0.61
F X E X T	8	138158.4	17269.80	1.05
C X E X T	8	100462.1	12557.75	0.77
S (FCE)	108	.19	172538.5	
F X C X E X T	8	134167.0	16770.87	1.02
S X T (FCE)	432	7090041.	16412.12	

*p<.001

Table 19
Analysis of Variance for Shock Intensity Data
From the First Group of Shock Trials (1 to 4)

Souce	df	SS	MS	F
F	1	1576.88	1576.88	0.06
C	1	25.21	25.21	0.00
E	2	46958.70	23479.35	0.96
F X C	1	161700.1	161700.1	6.60*
F X E	2	46451.24	23225.62	0.95
C X E	2	73917.75	36958.87	1.51
F X C X E	2	62880.19	31440.09	1.28
S (FCE)	108	2644661.	24487.60	

*p< .05

Table 20
Analysis of Variance for Total Scores
From 13 Bipolar Evaluative Adjectives

Source	df	SS	MS	F
F	1	564.90	564.90	6.84*
C	1	884.08	884.08	10.70**
E	2	67.80	33.90	0.41
F X C	1	49.34	49.34	0.60
F X E	2	130.24	65.12	0.79
C X E	2	10.72	5.36	0.06
F X C X E	2	130.80	65.40	
S (FCE)	96	7928.86	82.59	

*p<.05

**p<.005

Appendix D
Additional Tables

Table 21

Mean Ratings of Anger Obtained Under Conditions of Frustration,
Competency of Victim, and Function of Aggression

Facilitative	Condition	Incompetent	Competent
		Victim	Victim
Effects from Increasing Shock Intensity	Frustration	1.50	1.40
	No Frustration	1.10	1.00
No Effect from Increasing Shock Intensity	Frustration	1.40	2.40
	No Frustration	1.40	1.20
Inhibitive Effects from Increasing Shock Intensity	Frustration	1.50	1.30
	No Frustration	1.00	1.60

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